

REMARKS

Applicant has carefully reviewed the Office Action dated August 13, 2002, and herein amends the Application. Claims 1-58 are pending in the present application. Applicant has amended Claim 23, 25, 30-35, 37, 38, 43, 44 and added new Claims 45-58 to overcome the Examiners rejections. Applicant respectfully submits that support for the pending claims is disclosed in the present application, and that new matter is not being added to the present application. Reconsideration and favorable action is respectfully requested.

Applicant notes that Claims 1-22 as issued in the '705 patent are pending in the present application, and are also pending in Reissue Application Serial No. 09/166,238, of which the present application is a continuation application. Applicant intends to later cancel Claims 1-22 in Application Serial No. 09/166,238 after a final determination on the Appeal, but does not at this time wish to delay the determination of the Appeal, and at the same times does not want to delay issuance of the present application as a patent which includes pending Claims 1-22.

Applicant notes that support in the Specification of the present application for the structure of the various elements of Claims 23-44, as amended, are as set forth in the present application and as set forth in Application Serial No. 09/166,238, with the exception that reference to the nonessential limitations of windows in the support member, which were removed from amended Claim 23, 25, 30-35, 37, 38, 43, 44, and are being removed Claims 24, 26-29, 36, and 39-42 by such claims being dependent upon respective ones of amended Claim 23, 25, 30-35, 37, 38, 43, 44. Applicant notes that support for such claims is shown in the disclosure of the present application and the '705 patent as issued, and that new matter is not being added by removal of the windows limitations from Claims 23-44.

In Claims 25, 33, 37 and 44, claim limitations set forth a the structure of "an open space in said support member," which is shown in the '705 patent in FIGS. 2 - 4, and FIGS. 6-7, as open space in the support member 22. In Claims 52, 53 and 58, a claim limitation of

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“the support member having a stop” which engages the ball grid array device, which is shown in the drawings in FIG. 1 as the edge of spacer 35, and in FIG. 7 as an edge of the support member 22, both being stops for engaging the ball grid array device 10. The remaining structural elements set forth in Claims 23- 44 and new Claims 45- 58 are included in claims limitations of the previously pending Claims 1 - 44, of both the present application and of pending Application Serial No. 09/166,238. Applicant respectfully submits that no new matter has been added to the present application, as compared to the ‘705 patent, as issued.

Applicant thanks the Examiner for kindly interviewing Applicant and its Attorney prior to submission of the Claims included in this Amendment. Should the Examiner consider further amendment in the present case necessary, Applicant requests that the Examiner contact Applicant’s Attorney at the below listed number for a later interview in order to reach a prompt resolution of matters pertaining to allowance of the present application.

The U.S. Patent & Trademark Office is hereby authorized to charge any fees due or credit any overpayments to Deposit Account No. 502112/PLST-0307US for the firm CHAUZA & HANDLEY, L.L.P.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

23. (Amended) Apparatus for mounting a ball grid array device, the ball grid array device
having terminal balls depending from the ball grid array device, and the apparatus comprising:

(a) a support member having a support face [which defines a window arranged to
receive terminal balls depending from one face of a ball grid array device when], wherein the
ball grid array device is positioned on [the] said support face of said support member;

(b) a base member;

(c) a bending plate having apertures therein substantially corresponding with [said]
the terminal balls, said bending plate positioned between said base member and [the] said
support face of said support member and adapted for lateral movement with respect to said
support member;

(d) a plurality of elongated contact members anchored in said base member, each
having an interconnection end and a free end portion disposed on opposite sides of a central
section with said central section projecting through an aperture in said bending plate, and said
free end portion positioned to extend adjacent to a respective one of the terminal balls of the
ball grid array device [in a window in said support member]; and

(e) a cam adapted to move the position of said bending plate laterally with respect
to said support member and thereby urge said free end portions into contact with [said] the
terminal balls [between the centerline thereof and the face from which they depend].

24. Apparatus as defined in Claim 23 wherein said free end portion of each of said contact
members has a generally central axis and the extreme end of said end portion is deviated from
said generally central axis

25. (Amended) Apparatus as defined in Claim 24 wherein each said extreme end portion
extends into [the window in the] an open space in said support member but does not extend

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through said open space in said support member [window].

26. Apparatus as defined in Claim 23 wherein said cam contacts and moves said bending member.

27. Apparatus as defined in Claim 23 wherein said cam contacts and moves said support member.

28. Apparatus as defined in Claim 26 further comprising spring means to urge said bending plate laterally with respect to said support member.

29. Apparatus as defined in Claim 27 further comprising spring means to urge said support member laterally with respect to said bending plate.

30. (Amended) Apparatus as defined in Claim 24 wherein the extreme end of said free end portion of each of said contact members extends [into the window in said support member of] beneath a face of the ball grid array device from which said terminal balls depend a sufficient distance to contact a terminal ball [positioned in said window] between the center of the terminal ball and the face of the device from which such terminal ball depends.

31. (Amended) Apparatus as defined in Claim 23 further comprising spacers removeably affixed adjacent said support face to at least partially [define] locate the periphery of a ball grid array device [to be positioned on] relative to said support [face] member.

32. (Amended) Apparatus for mounting a ball grid array device, the ball grid array device having terminal balls depending from one face of the ball grid array device, and said apparatus comprising:

(a) a support member having a support face [which defines a window arranged to receive terminal balls depending from the face of a ball grid array device when said ball grid array device is positioned on the support face of said support member] on which said ball grid

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array device is located relative to said support member;

(b) a base member;

10 (c) biasing means having apertures therein substantially corresponding with the locations of said terminal balls [positioned between said base member and said support face of said support member];

(d) a plurality of elongated contact members anchored in said base member, each having an interconnection end and a free end portion disposed on opposite sides of a central section with said central section projecting through an aperture in said biasing means and said
15 free end portion defining a generally central axis with the extreme end portion of said free end portion deviated from said central axis and positioned [in said window in said support member] adjacent a respective one of said terminal balls of said ball grid array device; and

(e) means for moving said free end portions with respect to said support member and into contact with respective ones of said terminal balls.

33. (Amended) Apparatus as defined in Claim 32 wherein each said extreme end portion extends into [the window in the] an open space in said support member but does not extend through said open space in said support member [window].

34. Apparatus as defined in Claim 32 further comprising spacers removably affixed adjacent said support face to at least partially [define] locate the periphery of ball grid array devices [to be positioned on] relative to said support face.

√ 35. (Amended) The combination comprising:

(a) a ball grid array device having a first face and a plurality of terminal balls depending from said first face in a predetermined pattern, each of said terminal balls defining a geometric center spaced from said first face; and

5 (b) mounting apparatus comprising;

(i) a support member adjacent to which said ball grid array device is located [having a support face which defines a window receiving said terminal balls depending from said first face of said ball grid array device];

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- 10 (ii) a base member;
- (iii) a bending plate having apertures therein substantially corresponding with said terminal balls positioned between said base member and said support member; and
- 15 (iv) a plurality of elongated contact members, each having an interconnection end and a free end portion disposed on opposite sides of a central section with said central section projecting through an aperture in said bending plate and said free end portion positioned [in said window in said support member] adjacent to a respective one of said terminal balls and terminating between said first face of said ball grid array and the geometric center of [a] said respective one of said terminal [ball] balls.

61 36. The combination defined in Claim 35 wherein said free end portion of each of said contact members has a generally central axis and the extreme end of said end portion is deviated from said generally central axis.

37. (Amended) The combination defined in Claim 36, wherein each said extreme end portion extends into [the window in the] an open space in said support member but does not extend through said open space in said support member [window].

38. (Amended) The combination defined in Claim 35 including means for moving said free end portion with respect to [said window] the terminal balls depending from the face of the ball grid array device.

39. The combination defined in Claim 38 wherein said means for moving comprises a rotatable cam adjacent said bending plate which, when rotated, coacts with said bending plate to move said plate laterally with respect to said support member.

40. The combination defined in Claim 39 wherein said means for moving includes a spring positioned to urge said bending plate laterally with respect to said support member.

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41. The combination defined in Claim 38 wherein said means for moving comprises a rotatable cam adjacent said support member which, when rotated, coacts with said support member to move said support member laterally with respect to said bending plate.

42. The combination defined in Claim 41 wherein said means for moving includes a spring positioned to urge said support means laterally with respect to said bending plate.

43. (Amended) Apparatus for mounting a ball grid array device, the ball grid array device having terminal balls depending from the ball grid array device, and said apparatus comprising:

5 (a) a support member having [a] at least one support surface [support face which defines a window arranged to receive terminal balls depending from one face of a ball grid array device when said] against which the ball grid array device [is positioned on the support face of said support member] is disposed to located the ball grid array device in a desired position relative to said support member;

10 (b) a base member;

(c) a bending plate having apertures therein substantially corresponding with [said] the terminal balls, said bending plate positioned between said base member and said support member and adapted for lateral movement with respect to said support member;

15 (d) a plurality of elongated contact members anchored in said base member, each having an interconnection end and a free end portion disposed on opposite sides of a central section with said central section projecting through an aperture in said bending plate and said free end portion positioned [in the window in said support member] adjacent to a respective one of the terminal balls; and

20 (e) a cam adapted to move the position of said bending plate laterally with respect to said support member and thereby move said free end portions [within said window] against respective ones of the terminal balls.

44. (Amended) Apparatus for mounting a ball grid array device, the ball grid array device having terminal balls depending from one face of the ball grid array device, and said apparatus

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comprising:

(a) a base member;

5 (b) [(a)] a support member having a support face [defining a window arranged to receive terminal balls depending from the face of a ball grid array device when said ball grid array device is positioned on the support face of said support member] against which the ball grid array device is located, with said terminal balls extending toward said base member;

[(b) a base member;]

10 (c) biasing means having apertures therein substantially corresponding with said terminal balls, said biasing means positioned between said base member and [the] said support face of said support member;

6 d) a plurality of elongated contact members anchored in said base member, each having an interconnection end and a free end portion disposed on opposite sides of a central section with said central section projecting through an aperture in said biasing means and said 15 free end portion having an extreme end portion thereof positioned [in the window in said support member] adjacent respective ones of the terminal balls; and

(e) means for moving said free end portions generally parallel with respect to said support face and into contact with said terminal balls.

6² --45. Apparatus as defined in Claim 44, wherein said terminal balls extend downward from said support face, and said base member is disposed beneath said support face.--

--46. Apparatus as defined in Claim 44 wherein each said extreme end portion extends into an open space in said support member but does not extend through said open space in said support member.--

--47. Apparatus for mounting a ball grid array device, the ball grid array device having an array of terminal balls depending from the ball grid array device, and said apparatus comprising:

5 (a) a support member having a support face, wherein the ball grid array device is positioned on said support face such that at least a portion of said support face supportingly

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engages the ball grid array device;

(b) a base member;

(c) a bending plate having apertures therein substantially corresponding in relative relation with the terminal balls depending from the ball grid array device, and adapted for

10 lateral movement with respect to said support member;

(d) a plurality of elongated contact members anchored in said base member, each having an interconnection end and a free end portion disposed on opposite sides of a central section, with said central section projecting through a respective one of said apertures in said bending plate and said free end portion positioned to extend adjacent to a respective one of the
15 terminal balls of the ball grid array device; and

(e) a cam adapted to move the position of said bending plate laterally with respect to said support member and thereby urge said free end portions of said elongated contact members into contact with the respective ones of the terminal balls.

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--48. Apparatus as defined in Claim 47 wherein said free end portion of each of said contact members has a generally central axis and the extreme end of said end portion is deviated from said generally central axis.--

--49. Apparatus as defined in Claim 47 wherein said cam contacts and moves only one of said bending member and said support member, and said apparatus further comprising spring means to urge said one of said bending plate and said support plate laterally with respect to the other of said bending plate and said support member.--

--50. Apparatus as defined in Claim 47 wherein the extreme end of said free end portion of each of said contact members extends a sufficient distance to contact a respective terminal ball between the center of the terminal ball and the face of the device from which such terminal ball depends.--

--51. Apparatus as defined in Claim 47 further comprising spacers disposed adjacent said support face to at least partially locate a periphery of the ball grid array device in a lateral

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position relative to said on said support face.--

--52. Apparatus for use with a ball grid array device of the type having an array of terminal balls extending therefrom, said apparatus comprising:

a support member having a support face for supporting thereon the ball grid array device, said support member having a stop for engaging the ball grid array device to locate the ball grid array device with respect to said support member;

a bending member having a plurality of apertures generally registered with the terminal balls when the ball grid array device is located with respect to said support member;

a base member;

a plurality of elongated contact members secured in said base member and extending from said base member, through respective ones of said apertures in said bending member and toward the ball grid array device, said elongated contact members each having contact ends extending so as to be positioned to a side of a respective terminal ball of said ball grid array device; and

a cam adapted for moving at least one of said bending member and said support member to thereby move the contact ends of said elongated contact members sideways into contact with respective terminal balls.--

--53. The apparatus of Claim 52, wherein said support member is positioned over said bending member, and said bending member is positioned over said base member, and said contact ends of said elongated contact members extend into an area occupied by said support member, whereby when the ball grid array device rests on said support face and is engaged with said stop, said contact ends of said elongated contact members are adjacent respective terminal balls of the ball grid array device.--

--54. The apparatus of Claim 53, wherein said support member includes in said area occupied by said support member, an array of windows, and each contact end of said contact members extends into a respective one of said windows.--

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--55. Apparatus as defined in Claim 52 wherein said free end portion of each of said contact members has a generally central axis and the extreme end of said end portion is deviated from said generally central axis.--

--56. Apparatus as defined in Claim 52 wherein said cam contacts and moves only one of said bending member and said support member, and said apparatus further comprising spring means to urge said one of said bending plate and said support plate laterally with respect to the other of said bending plate and said support member.--

B² --57. Apparatus as defined in Claim 52 herein the extreme end of said free end portion of each of said contact members extends a sufficient distance to contact a respective terminal ball between the center of the terminal ball and the face of the device from which such terminal ball depends.--

--58. Apparatus as defined in Claim 52, wherein said stop comprises a spacer disposed adjacent said support face to at least partially locate a periphery of the ball grid array device laterally relative to with respect to said support face.--

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